

REMARKS/ARGUMENTS

The independent claim has been revised to state that which appeared in the claims as filed, namely that the copolymer of that claim is one "formed by radical copolymerization of components a) and b) in an aqueous phase." A minor spelling error in Claim 3 has been corrected. The claims before the Examiner remain Claims 1-24.

The withdrawal of the previous rejection over Behr et al. '624 is noted.

The rejection of Claims 1-12 and 14 under 35 U.S.C. § 102 as anticipated by or alternatively under 35 U.S.C. § 103 as obvious over Krutko et al. SU '580 is respectfully traversed. Claim 1 now specifies, as it did originally, that the copolymer is formed by the radical copolymerization of the components a) and b) in an aqueous phase.

Krutko et al. SU '580, a reference cited during the course of examination in the international phase counterpart application, does not involve formation of a product by radical polymerization. An English translation of the International Preliminary Examination Report is attached; the Examiner is directed to V.2.2. The International Examiner stated in the last sentence in that section "The described method does not involve radical copolymerization."

In order to undertake radical polymerization, a radical initiator, which forms an integral part of the copolymer, is absolutely necessary. Copolymers formed without radical copolymerization have no radical initiator molecules incorporated in, e.g., covalently linked to, the polymers, and thus differ from copolymers obtained by radical copolymerization.

Krutko et al. SU '580 says nothing with respect to radical initiators nor is there any teaching or suggestion in the reference that the polymerization reaction is a radical polymerization. Rather, the reference describes polymerizing terpenes and methacrylic acid in an aqueous solution in the presence of sulfuric acid under heat treatment.

The present application at page 11, lines 4-11, describes various conditions for initiating radical polymerization. Those conditions include radiation with radioactive, electromagnetic, or ultraviolet radiation or a redox reaction of two compounds, such as a reaction of sodium hydrogen sulfite with potassium persulfate or ascorbic acid with hydrogen peroxide. Other techniques include thermally induced decomposition of a radical initiator such as azobisisobutyronitrile, sodium peroxydisulfate, t-butylhydroperoxide or benzoylperoxide. It is also possible to combine several of these methods, preferably when water-soluble initiator components are used. The present invention allows copolymerization to take place in the aqueous phase in a simple way to form clear solutions that can be immediately used without having to isolate the copolymer. Krutko et al. SU '580 does not teach or suggest such a product and the rejection should be withdrawn.

The rejection of Claims 13 and 15-21 under 35 U.S.C. § 103 as unpatentable over Krutko et al. SU '580 in view of Werres et al. WO '296 is also respectfully traversed.

The Examiner acknowledges that the primary reference does not teach radical copolymerization and the differences that are found between polymers so made and polymers made by other techniques have been discussed above. It is respectfully submitted that the newly cited secondary reference does not teach or suggest the methods of Claims 13 and 15-21, Claims 17-21 being method-of-use claims.

Werres et al. WO '296 describes oil-in-water emulsions and their use to prevent slime formation and the inhibition of microbial proliferation in water-carrying systems. The emulsions described in the secondary reference are not the copolymers of the present invention and, moreover, possess several disadvantages such as temperature sensitivity, storage instability over time, and separation of the oily phase of the emulsion. See the discussion of this reference in the application in the second full paragraph on page 2. A person of ordinary skill in the art would have no proper reason to combine the unrelated

teachings of Krutko et al. SU '580 and Werres et al. WO '296. The references have been put together only by hindsight reconstruction after a review of the present application. The rejection should be withdrawn.

The rejection of Claims 22-24 under 35 U.S.C. § 103 as unpatentable over Krutko et al. SU '580 in view of Behr et al. '624 is also respectfully traversed. The differences between the polymers of the present invention and those of Behr et al. '624 were discussed at length in the Amendment filed June 19, 2006. While there is discussion in the reference at column 3, lines 17-20, of use of the Behr et al. '624 copolymers as tackifiers in adhesives, in paints, and as binders for printing inks, textile sizing agents, builders and hardeners, one of ordinary skill in the art would have no incentive, other than one provided by a hindsight reconstruction after a reading of the present application, to combine Krutko et al. SU '580 and Behr et al. '624.

The primary reference is directed to a manner of improving a non-radically mediated polymerization reaction. That reference has no discussion regarding the use of copolymers of methacrylic acid and terpenes as agents for grinding and dispersing pigments for textile and leather treatment and as a cleaning agent. Neither reference, as explained above and in the previous reply, teaches or suggests a copolymer of present Claim 1. Accordingly, Claims 22-24 likewise are patentable. The rejection should be withdrawn as well.

In view of the foregoing revisions and remarks, it is respectfully submitted that the application is in immediate condition for allowance and a USPTO paper to those ends is earnestly solicited. The Examiner is requested to telephone the undersigned if additional changes are required in the case prior to allowance.

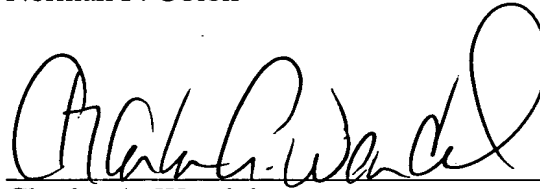
Respectfully submitted,

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Attachment: English translation of IPER

Translation

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PATENT COOPERATION TREATY

PCT/EP2003/006291



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 10228628/PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/006291	International filing date (day/month/year) 14 June 2003 (14.06.2003)	Priority date (day/month/year) 26 June 2002 (26.06.2002)
International Patent Classification (IPC) or national classification and IPC C08F 220/06, C02F 1/56, C14C 9/00		
Applicant STOCKHAUSEN GMBH		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 7 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 1 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 23 October 2003 (23.10.2003)	Date of completion of this report 04 November 2004 (04.11.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/006291

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1-23, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages 7-23, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 1-6, filed with the letter of 03 October 2004 (03.10.2004)
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig. _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/006291

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 1

because:

☐ the said international application, or the said claims Nos. 1
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1
are so unclear that no meaningful opinion could be formed (*specify*):

See the supplemental box

☐ the claims, or said claims Nos. 1 are so inadequately supported
by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. 1

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: III.1

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. Claim 1 is not clear as regards component b3) ("... fatty alcohol ... and its esters and amides..."). Presumably "its esters and amides" has been left in the claim by mistake (see the applicant's letter of 3 October 2004). The following examination in Box V is therefore based on a claim 1 which contains only an unsaturated fatty alcohol containing 8 to 30 carbon atoms as component b3) (PCT Article 6).
2. Claim 1 (copolymer of) is inconsistent with claim 10, which additionally claims other monomers c) (copolymer containing) (PCT Article 6).
3. Claims 18 and 19 are not supported by the description (PCT Article 6).
4. Claim 1 (the unsaturated fatty alcohols) is not fully supported by the description (PCT Article 6).
5. The respective amounts of components a), b) and c) (pages 7 to 9) appear to be essential to a clear definition of the term "water-soluble" (PCT Article 6).
6. The description is not consistent with the current version of the claims.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-23	YES
	Claims		NO
Inventive step (IS)	Claims	1-23	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims		NO

2. Citations and explanations

Novelty:

1. EP-A-1 209 198, example 17, discloses copolymers showing good solubility in water which are produced by radical copolymerization, in an organic solvent, of acrylic acid (a) with a compound (b), which contains at least two ethylenically unsaturated double bonds (pentaerythritol tetraallyl ether), and a compound (c), an ester obtainable by reacting an unsaturated fatty acid with a polyol (decaglyceryl monooleate). The copolymers are used as thickeners for aqueous systems.

The copolymers as per claim 1 differ from the copolymers of EP-A-1 209 198 in that they contain an unsaturated fatty alcohol as component (b) and in that they are formed by radical polymerization in aqueous phase.
2. SU-A-1 435 580 (Chemical Abstracts, see the international search report) describes the copolymerization of methacrylic acid with terpenes in aqueous solution in the presence of sulphuric acid. The aim is to increase the product yield and to reduce the reaction time.

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The described method does not involve radical copolymerization.

3. EP-A-0 219 043 discloses aqueous dispersions of copolymers of vinyl monomers (e.g., acrylates), optionally monoethylenically unsaturated carboxylic acids (e.g., acrylic acid) and terpenes (e.g., citrus terpene). The copolymers, which are obtainable by radical emulsion polymerization, are dispersible in water and are suitable as binders for interior paints.

The copolymers as per claim 1, unlike the copolymers of EP-A-0 219 043, are water soluble.

4. The copolymers as per claims 1-12, the method for producing them (claims 13-16) and their use (claims 17-23) are therefore novel in relation to the documents cited in the international search report (PCT Article 33(2)).

Inventive step:

The problem addressed by the invention was that of providing new water-soluble compositions for preventing the formation of inorganic and organic deposits in water supply systems, said components showing no toxicity, being stable in storage and exhibiting uniform effectiveness independently of temperature fluctuations.

None of the international search report citations suggests the water-soluble copolymers as a solution to the problem of interest:

The copolymers of EP-A-1 209 198 contain toxic solvents, disposal of which is extremely costly.

SU-A-1 435 580 deals with copolymers, principally with the method of producing them and increasing the yield.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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Consequently, the known copolymers solve a different problem from the copolymers as per claim 1.

EP-A-0 219 043 concerns only water-dispersible to water-resistant copolymers, which point away from the water-soluble copolymers as per claim 1 and from the problem addressed by the invention.

Consequently, an inventive step can be acknowledged for claims 1-23 (PCT Article 33(3)).

Industrial applicability:

The copolymers, the method of producing them and their use (claims 1-23) are industrially applicable (PCT Article 33(4)).